

## INTERNATIONAL SEARCH REPORT

International Application No

PCT/JP2004/016690

A. CLASSIFICATION ATTORNEY'S OFF SUBMITTED BY MATTHEW  
C07C17/389 C07C19/08

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)  
C07C

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ, CHEM ABS Data

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No
Y	US 5 396 001 A (PENNETREAU ET AL) 7 March 1995 (1995-03-07)	1-9
X	column 1, lines 36-44; Table 1 and Table 2; column 4, lines 15-21; claims -----	10-13
Y	US 4 950 816 A (TUNG ET AL) 21 August 1990 (1990-08-21) page 2, lines 24-33; claims 1, 5-10 -----	1-9
Y	WO 01/83412 A (SHOWA DENKO K. K.; OHNO, HIROMOTO; OHI, TOSHIO) 8 November 2001 (2001-11-08) column 4, lines 13-43; column 6, Table 1, Example 1; column 7, Table III; claims ----- -/--	1-9

☒ Further documents are listed in the continuation of box C

☒ Patent family members are listed in annex

## \* Special categories of cited documents

A\* document defining the general state of the art which is not considered to be of particular relevance  
E\* earlier document but published on or after the international filing date  
L\* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)  
O\* document referring to an oral disclosure, use, exhibition or other means  
P\* document published prior to the international filing date but later than the priority date claimed

T\* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention  
X\* document of particular relevance, the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone  
Y\* document of particular relevance, the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art  
&\* document member of the same patent family

Date of the actual completion of the international search

24 November 2005

Date of mailing of the international search report

12. 01. 2006

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C(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 6 274 782 B1 (OHNO HIROMOTO ET AL) 14 August 2001 (2001-08-14) column 3, line 62 - column 4, line 40; Examples -----	1-9
Y	US 4 906 796 A (YATES ET AL) 6 March 1990 (1990-03-06) column 2, lines 14-36 and lines 49-51; column 3, lines 5-14; Example 1 and 2; claims -----	1-9
X	GOLUBEV A N ET AL: "1,1-Difluoroethane" CHEMICAL ABSTRACTS + INDEXES, AMERICAN CHEMICAL SOCIETY, COLUMBUS, US, vol. 1, no. 78, 1973, page 308, XP002013161 ISSN: 0009-2258 abstract -----	14-19
X	EP 0 693 469 A (DAIKIN INDUSTRIES, LIMITED) 24 January 1996 (1996-01-24) page 2, lines 14-16 -----	14-19
X	US 5 626 725 A (BALTHASART ET AL) 6 May 1997 (1997-05-06) column 3, lines 10-16 -----	14-19
X	WPI WORLD PATENT INFORMATION DERWENT, DERWENT, GB PA - ELECTRO CHEMICAL IND CO L PN - JP47011726B B, 1973, XP002028123 abstract -----	14-19
X	US 3 862 995 A (MARTENS ET AL) 28 January 1975 (1975-01-28) column 2, lines 31-41 -----	14-19
X	wo 96/40606 A (E.I. DU PONT DE NEMOURS AND COMPANY) 19 December 1996 (1996-12-19) page 5, lines 6-18 -----	14-19
X	US 2002/007099 A1 (ANCIAUX CHARLES-MARIE ET AL) 17 January 2002 (2002-01-17) see '0024 !, '0025 !; Example 1; claims -----	14-19
X	EP 0 370 688 A (E.I. DU PONT DE NEMOURS AND COMPANY) 30 May 1990 (1990-05-30) page 4, line 51; page 4, line 55 - page 5, line 9; page 5, lines 30-32; claims -----	14-19

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International application No  
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## Box II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons

- 1 ☐ Claims Nos  
because they relate to subject matter not required to be searched by this Authority, namely
- 2 ☐ Claims Nos  
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically
- 3 ☐ Claims Nos  
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6 4(a)

## Box III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows

see additional sheet

- 1 ☒ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims
- 2 ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee
- 3 ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos
- 4 ☐ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims, it is covered by claims Nos

### Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest
- ☒ No protest accompanied the payment of additional search fees

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-13

Claims 1 -9 directed to a method for purifying 1,1-difluoroethane, comprising bringing crude 1,1-difluoroethane containing at least one compound selected from the group consisting of unsaturated compounds and saturated chlorine-containing compounds each having two carbon atoms within the molecule, into contact with an adsorbent comprising a zeolite and/or a carbonaceous adsorbent.

Claims 10-13 directed to the 1,1-difluoroethane product.

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2. claims: 14-19

Claims 14-19 directed to a method for purifying 1,1-difluoroethane, comprising bringing crude 1,1-difluoroethane containing hydrogen fluoride and, as impurities, at least one compound selected from the group consisting of unsaturated compounds each having two carbon atoms within the molecule, into contact with a fluoridation catalyst in the gas phase to reduce the content of the unsaturated compounds each having two carbon atoms within the molecule.

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# INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

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